1862MNRAS..22...90H

with the 9-inch object-glass, which Messrs. Cooke and Sons have been preparing for my equatoreal. The excellence of its defining power may be judged of from the fact of its separating the dark streak across the planet into two parts, with an almost inconceivably fine line of light between, viz., the ring itself and its shadow. The breadth of the former could not have been much more than 0″·04.

"Only four satellites could be seen, viz., *Titan*, at some distance, and the three shown in the drawing, of which the outermost is *Tethys*, and the other two, probably, *Dione* and *Enceladus*.

"*Hartwell, near Aylesbury,*
December 11, 1861."

The Solar Eclipse of the 31st December, 1861, *observed at Kilkenny House, Sion Hill, Bath.* By R. W. H. Hardy, Esq., R.N.

As the clouds cleared off about noon, we were enabled to view the eclipse uninterruptedly. The moment of first contact was not accurately noticed. It appeared to take place at $1^h\ 45^m$ G.M.T. Soon after the eclipse began, and for some time afterwards, the overlapping surface of the Moon was covered over with a soft grey tint, which terminated on the advancing edge in a narrow band of deep purple. Concurrently with this purple band, there appeared in advance of the Moon's edge, but concentric with it, at a short distance, a bright gleam of light brighter than the solar disk. This light was separated from the Moon's edge by a narrow pale green shadow, which softened into the former. This is also the character of all shadows from objects on our Earth. At 2^h the Moon's edge undulated rapidly, while the Sun's edge remained comparatively tranquil. About this time also, the outline of the Moon appeared to form an irregular curvature, bulging out at the edge *a*, figure 1. This irregularity, however, diminished as the Moon advanced till she reached the central line, when it ceased; but began again to increase from this epoch till it reached a second maximum near the point *a′*, figure 3, at 3^h G.M.T. Before this, at $2^h\ 15^m$, a bright yellow-green light reflected from the Moon's edge and contiguous surface attracted our notice, which not only brought out our satellite in strong relief, but also showed the lunar surface beautifully foreshortened, especially so at $3^h\ 35^m$. With respect to the apparent undulations of the edges of the Sun and Moon, they were about equal when our satellite reached the line of centres, and at their

Downloaded from http://mnras.oxfordjournals.org/ at Florida International University on July 29, 2015

© Royal Astronomical Society • Provided by the NASA Astrophysics Data System

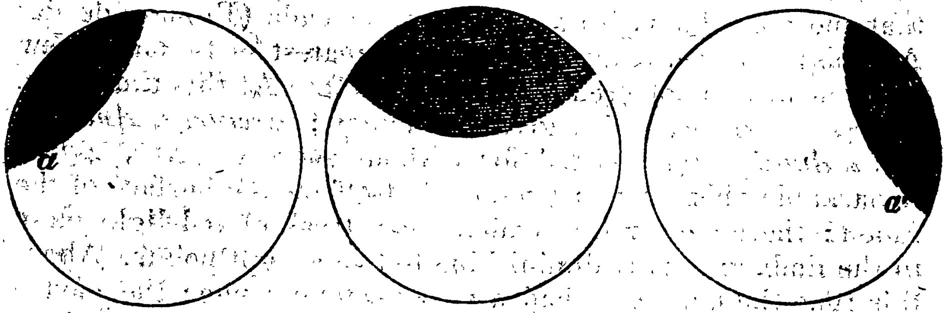
1862MNRAS..22...91T

greatest difference of velocity when she attained the two opposite points *a* and *a'*, figures 1 and 3. When the moon reached the middle of the eclipse, as shown in figure 2, and by carefully excluding every ray of direct solar light, the Moon's edge was traceable upwards to a considerable distance from both cusps, as if illuminated by a faint twilight. The conclusion of the eclipse was not seen, owing to the thickness of the sky about that time.

My telescope is a 12-inch Newtonian reflector; the eyepiece I used on the occasion was an inverting one, and the power employed 60 times, which takes all the sun into the field. The projecting glass was a neutral tint, which does not materially affect the appearance of the colour of natural objects.

Inverted Images.

Fig. 1. Fig. 2. Fig. 3.



Commencement, Middle, Termination.

Eclipse of the Sun of 31*st December*, 1861, *observed at Nice.*

By C. G. Talmage, late of the Greenwich and Regent's Park Observatories, Assistant to T. Coventry, Esq., 5 Tavistock Square.

(*Communicated by Mr. Hind.*)

The instrument used was a 5-foot Equatoreal, the stand and metal-work being constructed by Troughton and Simms; but the object-glass, which has a clear aperture of 4 inches, is of Munich manufacture.

Every precaution was taken that the first contact should be accurately observed; and the time, thermometer, and barometer observations are put by themselves, as being easier for reference.

Downloaded from http://mnras.oxfordjournals.org/ at Florida International University on July 29, 2015

© Royal Astronomical Society • Provided by the NASA Astrophysics Data System